

# Scheduling Physicist Journal

C.J. Gardner

September 22, 2006

## 1 Tue 5 Sept 06

At the Time Meeting it was decided that the start of RHIC cool-down will be delayed until 1 November 2006. Further delays may be necessary depending on the funding situation. These will be announced one month prior to the scheduled start date.

## 2 Wed 6 Sept 06

1. Booster Radiation Safety Check-Off list completed by 4:00 pm.
2. Proton beam (from Tandem) injected into Booster but survives for only one or two turns.

## 3 Thur 7 Sept 06

1. After much searching by Paul Sampson and Greg Marr, Greg finds that the beam does not spiral because the Booster injection dipoles are in the wrong polarity. This was due to particle species “protons” being specified in the Superman application rather than “Tandem protons”.
2. Acceleration of Tandem protons to 2 GeV kinetic energy in Booster was then established.
3. Thursday afternoon, Kip Gardner worked on setting up a fault study for the EBIS-Booster penetration. He was unable to produce the

desired fault condition with beam being lost at the QHC2 quadrupole in Booster.

## **4 Fri 8 Sept 06**

1. Setup for the EBIS-Booster penetration fault study resumed in the morning.
2. Leif Ahrens found that polarity of the B6 dump bump in Booster is opposite what it was thought to be. Greg Marr was then able to make local losses at the dump and the C3 inflector. It was not possible to make a local loss at quadrupole QHC2.
3. The fault study was carried out and finished by 1:30 PM. No radiation (above background) was detected at the opening of the penetration pipe in the Linac building.
4. Tandem switched from protons to chlorine ions ( $\text{Cl}^{14+}$ ) which were injected into Booster and accelerated to kinetic energies of 650 and 1000 MeV per nucleon. The chlorine ions were extracted and transported down the R line to the NSRL target room.
5. Adam Rusek did Bragg curve measurements.

## **5 Mon 11 Sept 06**

Start of NSRL run. Some problems getting started: RQ3 power supply failure; iris scanner, stepper motor control, network camera, and data acquisition system problems. Chlorine ions with kinetic energies of 650 and 1000 MeV (per nucleon) were delivered to the NSRL target room.

## **6 Tue 12 Sept 06**

NSRL ran with chlorine ions and then with protons.

## **7 Wed 13 Sept 06**

1. NSRL continued running with 1 GeV protons.

2. In the morning, vacuum group (Steve Gill) noticed that the pressure at D6 in Booster was rising. Upon completion of beam use for the day, vacuum personnel entered the ring and found a leak on the D6 ion pump header; this was sprayed with sealant which stopped the leak. Pressure at D6 returned to normal values.
3. Pilat and Sampson held a well-attended and productive meeting on maintenance policy.

## **8    Thur 14 Sept 06**

NSRL continued running with 1 GeV protons.

## **9    Fri 15 Sept 06**

1. Although originally scheduled to run with 2.5 GeV protons, NSRL decided to continue running with 1 GeV protons.
2. Upon completion of NSRL running for the day, 2.5 GeV proton beam was set up for next Friday. 200 and 500 MeV proton beams were developed for NSRL (to be used next Wednesday).

## **10   Mon 18 Sept 06**

1. 1 GeV protons delivered to NSRL.
2. Upon completion of NSRL running for the day, mode switching between protons and iron was setup. This effort was hampered by problems with the mode switching program. John Morris was consulted and fixed the problems.
3. As of today the Run 7 ion options are:
  - a) All Au-Au
  - b) d-Au followed by Au-Au
  - c) p-p followed by Au-AuA decision (as to which option) is expected Wed 20 Sept.

4. PHENIX prefers d-Au or p-p followed by Au-Au so that they can commission their detectors with low-mass ions.
5. STAR prefers Au-Au followed by d-Au so that they can commission their Forward Muon Spectrometer (FMS).
6. RHIC prefers Au-Au before p-p so that rewiring of the sextupole families can be completed before running with p-p. This allows for correction of second order chromaticity which is expected to reduce tune spread by 0.005 (according to Thomas Roser). This is supposed to help increase p-p luminosity by reducing beam-beam effect.

## 11 Tue 19 Sept 06

NSRL ran with mode switching between protons at 1 GeV kinetic energy and iron ions at 1 GeV (kinetic energy) per nucleon.

Here are John Morris' remarks regarding the mode switching problems encountered Monday night:

"The root cause turned out to be a problem within the mode switching sequences—not in the tape software. It's a problem that can come up in other mode switching sequences so I'll describe it here."

"The Save State step in a mode switching sequence saves device state information in its partner sequence. So the Iron-Hydrogen sequence, for example, saves Iron state information into the Hydrogen-Iron sequence. A full path of the partner sequence has to be specified in the Save State step. The paths of sequences changed with tape reorganization this summer so all Mode Switching sequences need to be updated to reflect the new paths."

"For example, the Iron-Hydrogen.tape sequence had to be updated as follows:

Change:

/operations/app-store/TAPE/sequences/mode-switch/Hydrogen-Iron/Hydrogen-Iron.llt

To:

/operations/app-store/tape/NSRL/ModeSwitch/Hydrogen-Iron.tape."

"I'll follow up with Ted and folks from operations to see that other mode switch sequences get updated as needed."

## **12 Wed 20 Sept 06**

1. There was a meeting with Peter Bond today but there is still no decision about Run 7 ions.
2. NSRL continued running with mode switching between protons at 1 GeV kinetic energy and iron ions at 1 GeV (kinetic energy) per nucleon. In the afternoon, the archive for 500 MeV protons was restored and protons were transported to the NSRL target room by 3:30 pm. Keith Zeno worked to improve the intensity but the SEB spill had large spikes which prohibited accurate dosimetry. 600 MeV protons were also transported to the target room but the spill quality was still poor. At 8:30 pm the Biologists decided to quit for the night. Adam Rusek requested that Kevin Brown be consulted in the morning.

## **13 Thur 21 Sept 06**

1. In the morning Kevin Brown worked on extraction to NSRL. By 1:30 pm NSRL was running with mode switching between 1 GeV protons and 1 GeV iron.
2. Starting around 3:15 pm, Kevin Brown and Keith Zeno worked on SEB spill structure.
3. Then around 17:20 pm, work on the Fast Extracted Beam (FEB) setup began. By 6:00 pm FEB was being delivered to the NSRL target room. By 19:34 pm the NSRL experimenters had completed their work with FEB.
4. Due to TTB beamstop reachback problems, the final NSRL running for the evening did not get started until 22:50 pm. It concluded around 1:00 am Friday morning.
5. Solar Particle Simulator development ran from 1:00 am to 4:00 am Friday morning.